**ABSTRACT**

This project presents a design and prototype implementation of new home automation system that uses WiFi technology as a network infrastructure connecting its parts. The proposed system consists of two main components; the first part is the server (web server), which presents system core that manages, controls, and monitors users’ home.

Users and system administrator can locally (LAN) or remotely (internet) manage and control system code. Second part is hardware interface module, which provides appropriate interface to sensors and actuator of home automation system.

Unlike most of available home automation system in the market the proposed system is scalable that one server can manage many hardware interface modules 5 as long as it exists on WiFi network coverage. System supports a wide range of home automation devices like power management components, and security components.

The proposed system is better from the scalability and flexibility point of view than the commercially available home automation systems.

**INTRODUCTION**

**PURPOSE**:

Home automation system achieved great popularity in the last decades and it increases the comfort and quality of life. In this paper an overview of current and emerging home automation systems is discussed. Nowadays most home automation systems consist of a smartphone and microcontroller. A smart phone application is used to control and monitor the home appliances using different type of communication techniques. In this paper the working principle of different type of wireless communication techniques such as ZigBee, Wi-Fi, Bluetooth, NodeMCU and GSM are studied and their features are compared with each other so the users can choose their own choice of technology to build home automation system. Moreover in this research work the survey of different home automation systems is discussed and their advantages and drawbacks are also highlighted.

The process of controlling various operating equipment, machinery, factory operations, etc., automatically (sometimes remotely) using control systems can be termed as automation. Automation is an efficient method to use in every field such that to reduce manpower, energy usage and also for improving the quality and efficiency of any system. There are various emerging automation applications and a few can be listed as home automation system, [industrial automation system](https://www.elprocus.com/different-types-of-automation-systems/), automated mining system, automated waste management system and so on.

**OBJECTIVE:**

* The goal of this project is to develop a home automation system that gives the user complete control over all remotely controllable aspects of his or her home.
* The automation system will have the ability to be controlled from a central host PC, the Internet, and also remotely accessed via a Pocket PC with a Windows Mobile based application.
* The System will also sense the Accidental Gas leakage , water level and will notify the user by SMS.

**MOTIVATION:**

* Many tasks that are repetitive in nature can be accomplished automatically or with fewer steps using home automation. Instead of turning off or dimming four different lights when you want to watch a movie, home automation allows you to accomplish this task with one button.
* Utilities can amount to several hundred dollars per month. Home automation can turn off lights or lower the thermostat automatically when you aren’t using them and easily lower your utility bills by 10% to 25%.
* Although home security is a priority for everyone, high installation cost or monthly monitoring charges make security systems cost prohibitive for many homeowners. Home automation provides an inexpensive [solution to home security](https://www.lifewire.com/best-home-security-systems-under-100-4149405).
* In a time when we are all becoming more environmentally aware, home automation provides a good solution to help preserve our natural resources. Home automation products can reduce power consumption and automatically turn off lights and appliances when they aren’t in use.

**DEFENITION & OVERVIEW:**

Home automation system is growing rapidly, they are used to provide comfort, convenience, quality of life and security for residents. Nowadays, most home automation systems are used to provide ease to elderly and disabled people and they reduce the human labour in the production of services and goods.

Home automation system can be designed and developed by using a single controller which has the ability to control and monitor different interconnected appliances such as power plugs, lights, temperature and humidity sensors, smoke, gas and fire detectors as well as emergency and security systems .

One of the greatest advantage of home automation system is that it can be controlled and managed easily from an array of devices such as smartphone, tablet, desktop and laptop . The rapid growth of wireless technologies influences us to use smartphones to remotely control and monitor the home appliances around the world . Several home automation systems use smartphones to communicate with microcontrollers using various wireless communication techniques such as Bluetooth , GSM , ZigBee , Wi-Fi and NodeMCU0. .

Smartphone applications are used to connect to the network so that the authorized users can adjust the setting of system on their personal devices. Different type of home automation systems offer a wide range of functions and services, some of the common features are appliance control, thermostat control, remote control lighting, live video surveillance, monitor security camera, real time text alerts